

PATENT CLAIMS

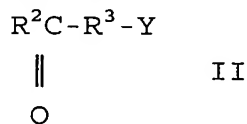
1. Ion-conductive thermoplastic composition containing a partially acetalated polyvinyl alcohol, at least one support electrolyte and at least one plasticiser, **characterised in that** the partially acetalated polyvinyl alcohol is a co-polymer containing the monomer units

- vinyl acetate
- vinyl alcohol
- acetal I from vinyl alcohol and at least one aldehyde with formula I



with R^1 : branched or unbranched alkyl radical with 1 to 10 carbon atoms

- acetal II from vinyl alcohol and a carbonyl compound with the formula II



with $\text{R}^2 = \text{H}$, branched or unbranched alkyl radical with 1 to 10 carbon atoms,

$\text{R}^3 =$ direct compound, branched or unbranched alkyl radical with 1 to 10 carbon atoms,

aryl radical with 6 to 18 carbon atoms and

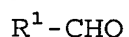
$\text{Y} = -\text{CO}_2\text{H}$, $-\text{SO}_3\text{H}$, $-\text{PO}_3\text{H}_2$.

2. Ion-conductive thermoplastic composition according to claim 1 **characterised in that** the ratio of the monomer units in the partially acetalated polyvinyl alcohol of acetal I to acetal II is 1:1 to 10,000:1.

3. Ion-conductive thermoplastic composition according to claim 1 or 2 **characterised in that** the partially acetalated polyvinyl alcohol contains

- 0.01 to 5 % by weight of polyvinyl acetate

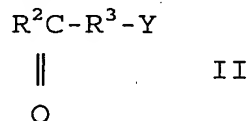
- 10 to 40 % by weight of vinyl alcohol and
 - 40 to 80 % by weight of acetals I and II
4. Ion-conductive thermoplastic composition according to one of claims 1 to 3 **characterised in that** acid-functionalised aldehydes are used as carbonyl compound of formula II.
 5. Electrochromic composite system build up of two bodies coated with electrodes, at least one of which is transparent and at least one exhibits an electrochromic film, which are separated by a foil with a composition according to one of claims 1 to 4.
 6. Electrochromic composite system according to claim 5 **characterised in that** at least one of the electrochromic films contains a metal polycyanometalate, transition metal oxide or conductive polymer modifying the colour on cathodic reduction.
 7. Electrochromic composite system according to claim 5 **characterised in that** at least one of the electrochromic films contains a metal polycyanometallate, transition metal oxide or conductive polymer modifying the colour on anodic oxidation.
 8. Process for the production of an ion-conductive foil by extrusion of a mixture of
 - a) 50 - 90% by weight of a partially acetalated polyvinyl alcohol containing the monomer units
 - vinyl acetate
 - vinyl alcohol
 - acetal I from vinyl alcohol and at least one aldehyde with formula I



I

with R^1 : branched or unbranched alkyl radical with 1 to 10 carbon atoms

- acetal II from vinyl alcohol and a carbonyl compound with the formula II



with $R^2 = H$, branched or unbranched alkyl radical with 1 to 10 carbon atoms,

R^3 = branched or unbranched alkyl radical with 1 to 10 carbon atoms,

aryl radical with 6 to 18 carbon atoms and

$Y = -CO_2H, -SO_3H, -PO_3H_2$

b) 10 to 50% by weight of at least one plasticiser and

c) 0.1 to 25% by weight of at least one support electrolyte

9. Process according to claim 8 **characterised in** that the extrusion is carried out under melt fracture conditions.

10. Process according to claim 8 **characterised in that** the foil is embossed on one side or both sides with a roughness of R_2 of 40-120 μm .

Drawings

Fig. 2

Colouring: +1.4V

Decolourising: -1.4V

Abscissa: time/sec

Ordinate: current density / $\mu\text{A cm}^2$